CEM Energy from tracks

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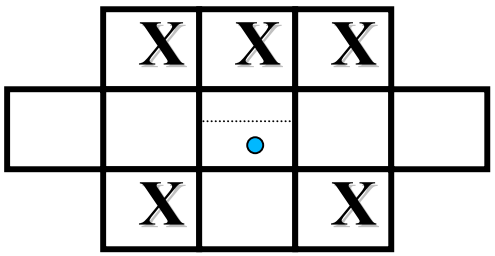
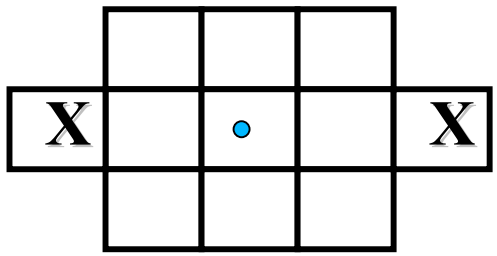
Soft Photons Background

4 Methods investigated: (CDF note 6042)

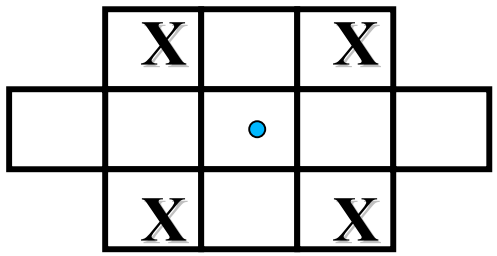
A) CDF1344 – 4 diagonal towers + the closest towers in phi



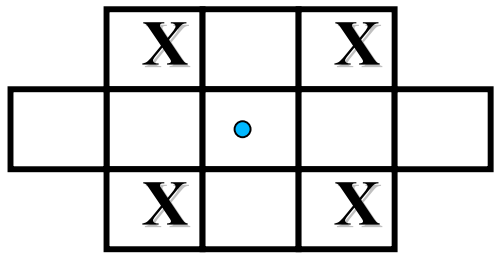
B) LL Method: 2 far in eta



C) Diagonal Tower Average



D) MIP Diagonal Average



A) and B) Method comparison

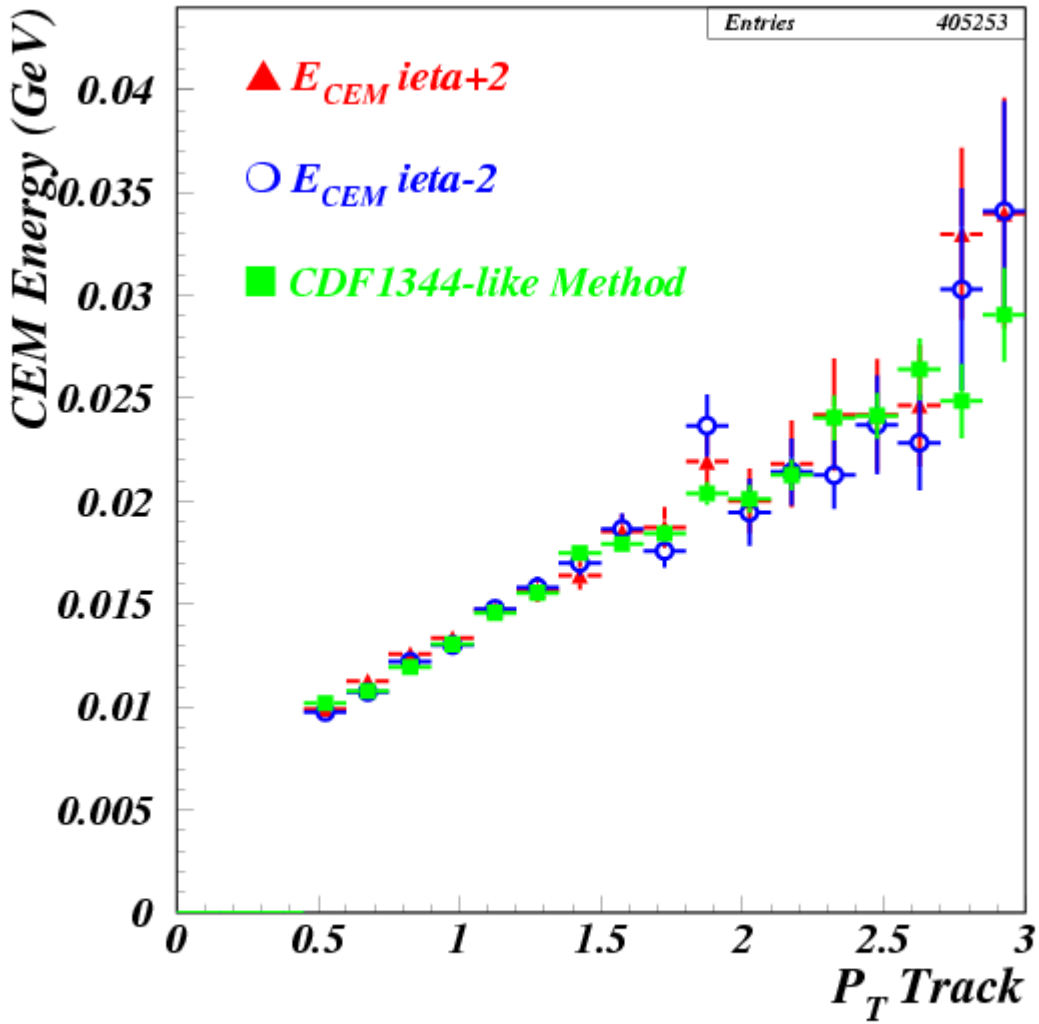
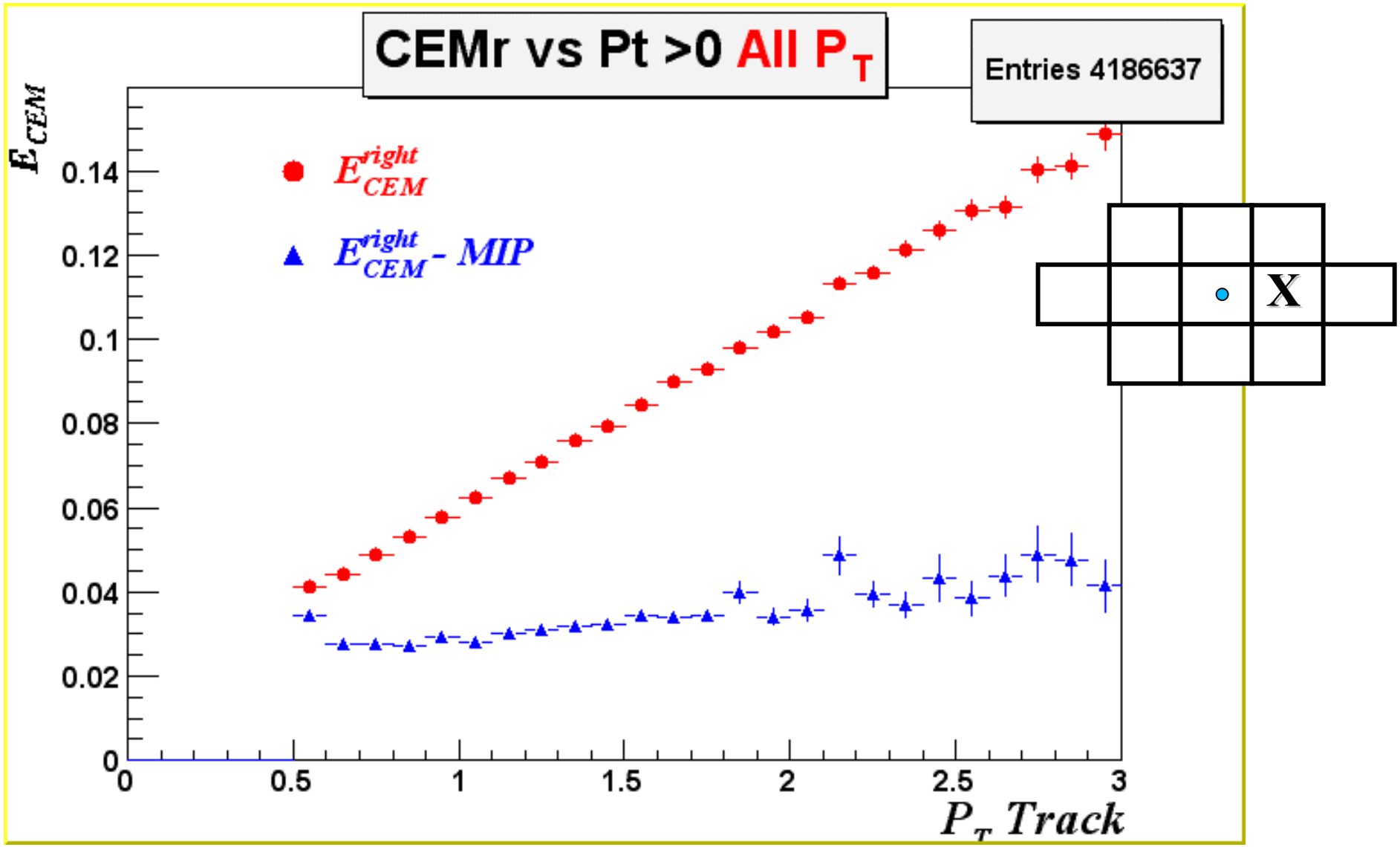
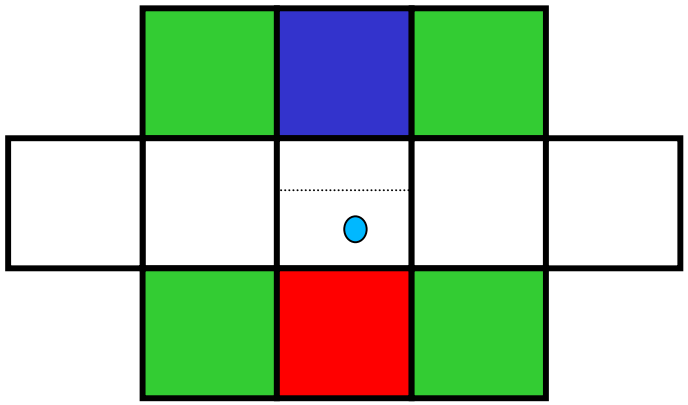


Figure 23: *Comparison of the background CEM energy as defined by the CDF1344-like method and by the LL method as a function of the track P_T*

MIP Method - I


CEMr vs Pt >0 All P_T
Entries 4186637
E_{CEM}
E^{right}_{CEM}
E^{right}_{CEM} - MIP
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
0.5
1
1.5
2
2.5
3
P_T Track
X

MIP Method - II



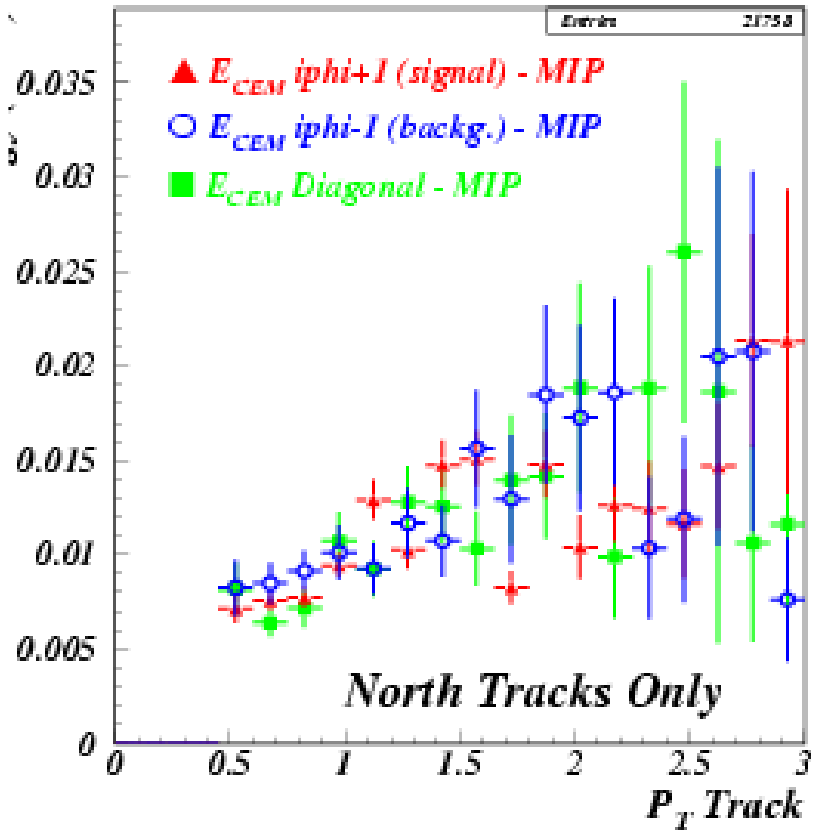


Figure 24: *Using the MIP track subsample, the plots on the left shows the comparison between the* E_{CEM}^{right} *(red ▲) and the average CEM energy deposited on the four diagonal towers (blue ◯). The plot on the right shows a comparison among the* E_{CEM} *of the "signal tower in phi" (red ▲), the* E_{CEM} *of the "background tower in phi" (blue ◯) and the average CEM energy deposited on the four diagonal towers (green ■)*

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CES Isolation

If photons are not so soft they can form a CES clusters

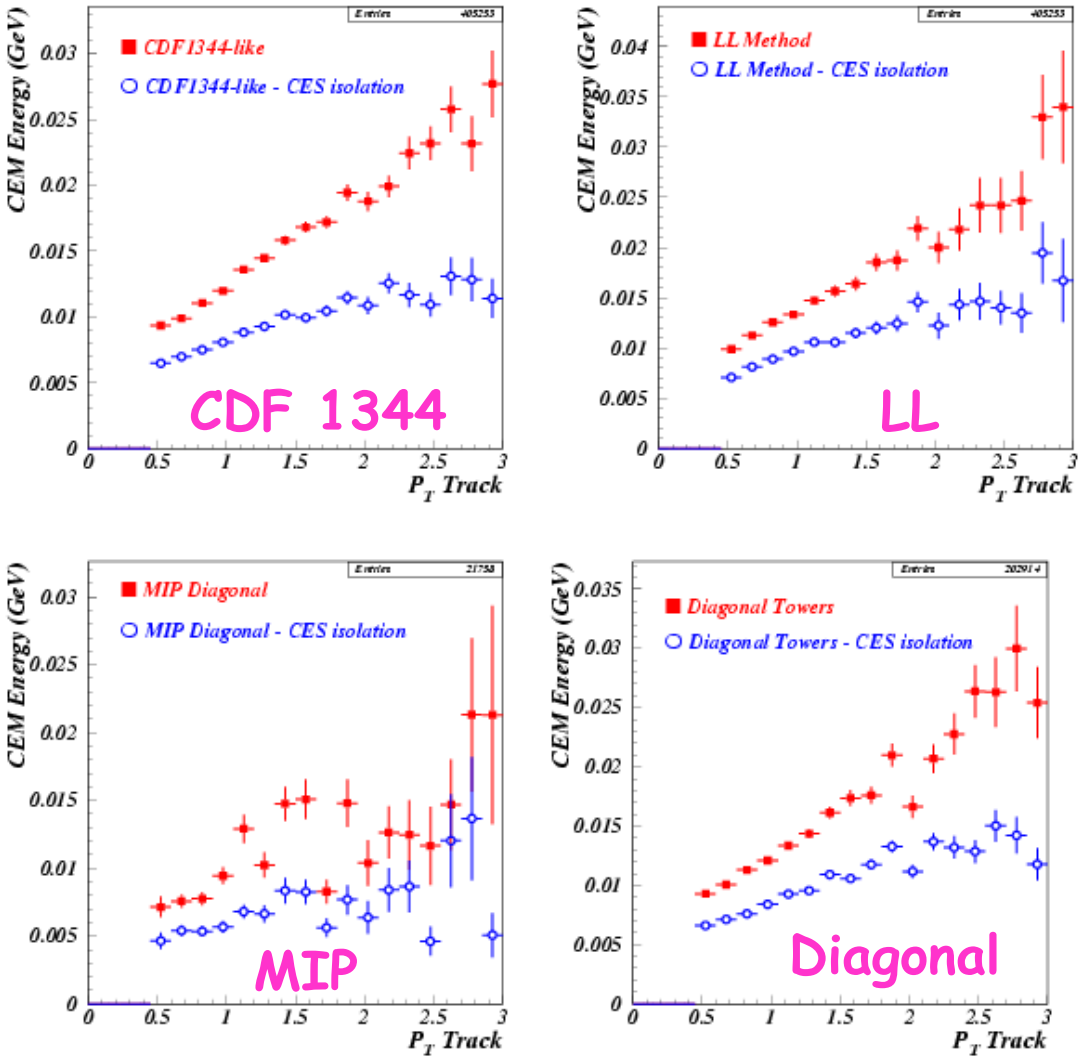

Figure 27: *Comparison of the background estimate between the whole sample and the subsample with the CES isolation requirement. Different plots refer to different background definition.*

Comparison with and w/o CES iso

CES iso == no CES Clusters in a 3x3 Windows (except close To the track)

Conclusions

Isolated track in MB are not really isolated: neutral Particles fall nearby

To extract the track CEM release we have to subtract The photon background contribution

Several approaches are possible: LL are our favorite

CES isolation helps getting rid of not-so-soft bkg and Reducing fluctuations

Next step: redo the "standard track plots" with the bkg. Subtraction and make fits.